1/25

LINE	FEXT	NEXT
0	4	7
1	4	7
2	4	7
3	4	6
4	4	7
5	4	7
6	4	7
7	4	7
8	4	6
9	4	7
10	4	7
11	4	7
12	4	6
13	5	6
14	4	7
15	4	7
16	4	7
17	4	6
18	4	7
19	4	7
20	4	7
21	4	6
22	5	6
23	4	7
24	4	7
25	4	7
26	4	6
27	4	7
28	4	7
29	4	7
30	4	7
31	4	6

FIG. 1

EP 2 685 650 A1

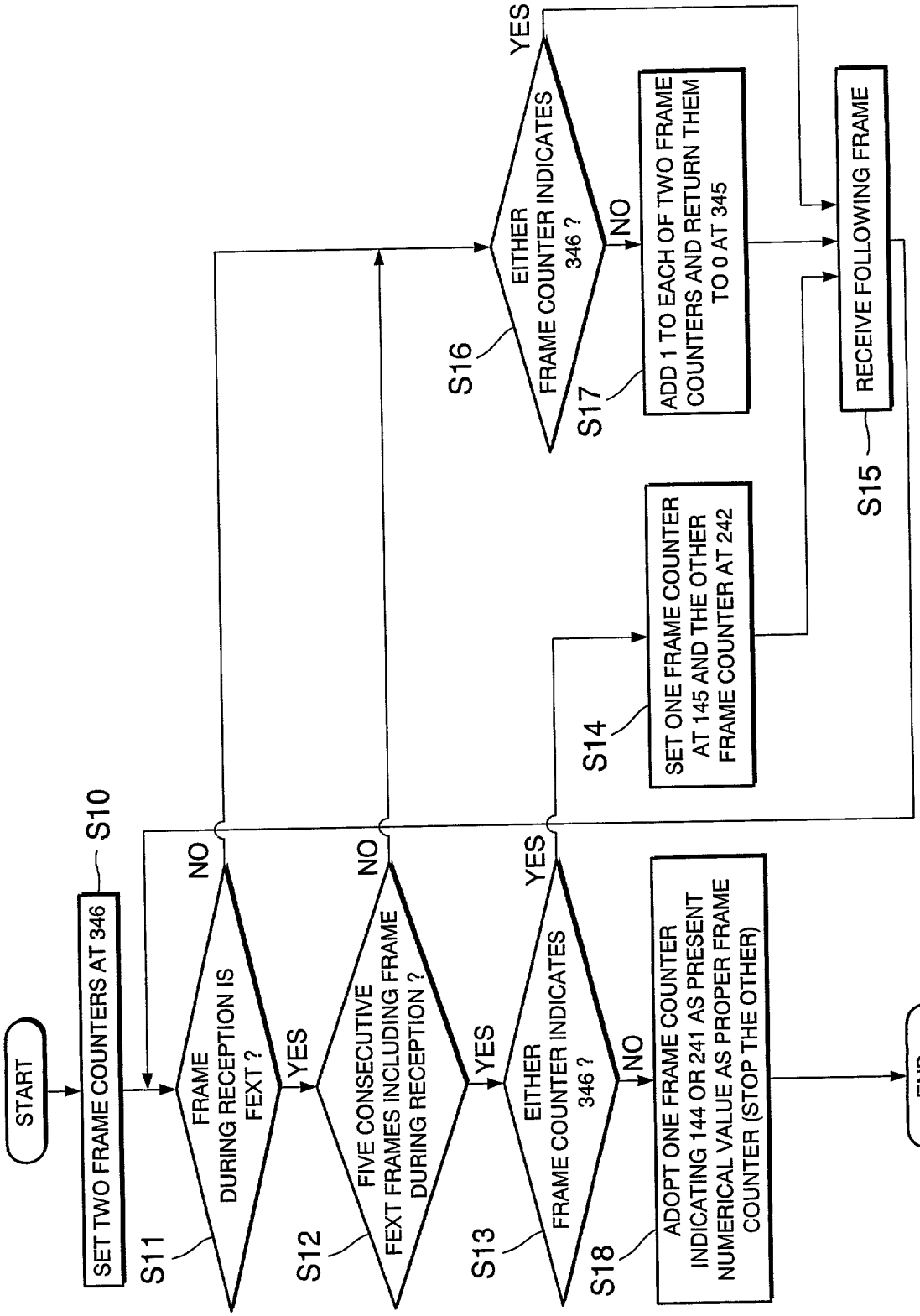

START
SET TWO FRAME COUNTERS AT 346
S10
FRAME DURING RECEPTION IS FEXT ?
S11
NO
YES
FIVE CONSECUTIVE FEXT FRAMES INCLUDING FRAME DURING RECEPTION ?
S12
NO
YES
EITHER FRAME COUNTER INDICATES 346 ?
S13
YES
NO
ADOPT ONE FRAME COUNTER INDICATING 144 OR 241 AS PRESENT NUMERICAL VALUE AS PROPER FRAME COUNTER (STOP THE OTHER)
S18
END
SET ONE FRAME COUNTER AT 145 AND THE OTHER FRAME COUNTER AT 242
S14
EITHER FRAME COUNTER INDICATES 346 ?
S16
YES
NO
ADD 1 TO EACH OF TWO FRAME COUNTERS AND RETURN THEM TO 0 AT 345
S17
RECEIVE FOLLOWING FRAME
S15

FIG. 2

3/25

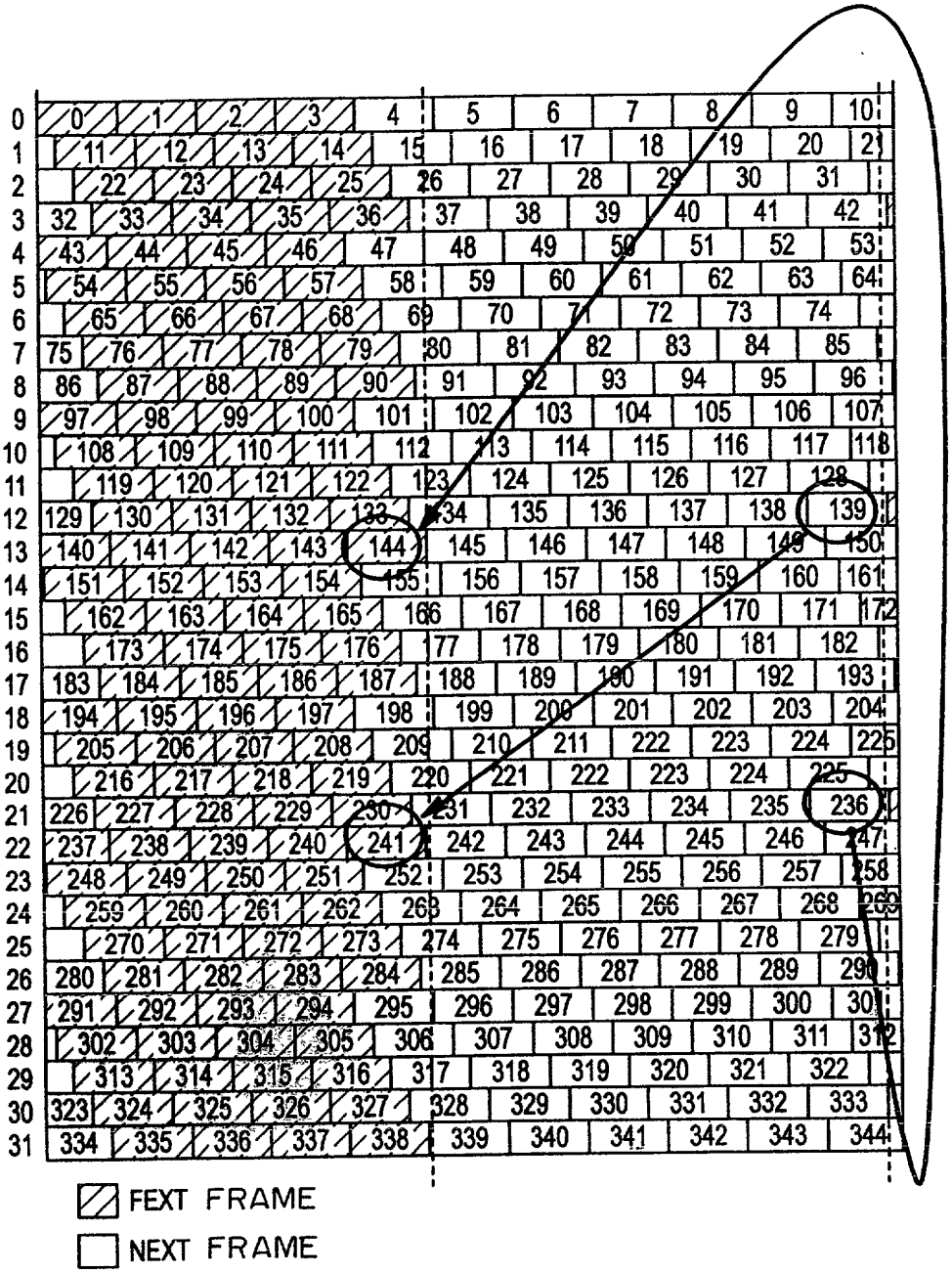


FIG. 3

4/25

LINE	FEXT	NEXT	DIFFER-ENCE
0.0	4	7	-3
1.0	4	7	-3
2.0	4	7	-3
3.0	4	6	-2
4.0	4	7	-3
5.0	4	7	-3
6.0	4	7	-3
7.0	4	7	-3
8.0	4	6	-2
9.0	4	7	-3
10.0	4	7	-3
11.0	4	7	-3
12.0	4	6	-2
13.0	5	6	-1
14.0	4	7	-3
15.0	4	7	-3
16.0	4	7	-3
17.0	4	6	-2
18.0	4	7	-3
19.0	4	7	-3
20.0	4	7	-3
21.0	4	6	-2
22.0	5	6	-1
23.0	4	7	-3
24.0	4	7	-3
25.0	4	7	-3
26.0	4	6	-2
27.0	4	7	-3
28.0	4	7	-3
29.0	4	7	-3
30.0	4	7	-3
31.0	4	6	-2

FIG. 4

D0C#206587US2 - DRAWINGS

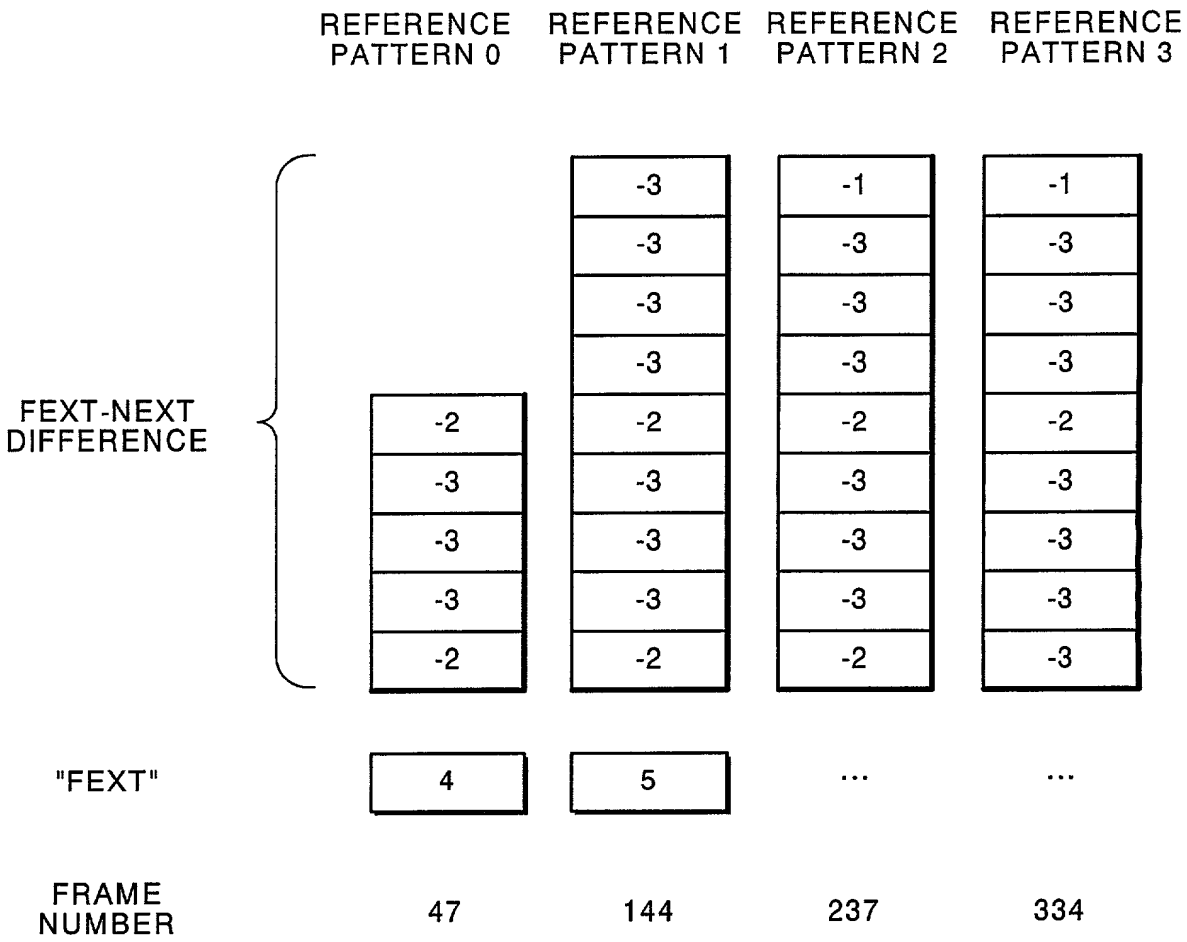

REFERENCE PATTERN 0
REFERENCE PATTERN 1
REFERENCE PATTERN 2
REFERENCE PATTERN 3
FEXT-NEXT DIFFERENCE
-2
-3
-3
-3
-2
-3
-3
-3
-3
-2
-3
-3
-3
-3
-2
-1
-3
-3
-3
-2
-3
-3
-3
-2
-1
-3
-3
-3
-2
-3
-3
-3
"FEXT"
4
5
...
...
FRAME NUMBER
47
144
237
334

FIG. 5

n	REFERENCE PATTERN 0 REF[0,n]	REFERENCE PATTERN 1 REF[1,n]	REFERENCE PATTERN 2 REF[2,n]	REFERENCE PATTERN 3 REF[3,n]
9		-3		
8		-3	-1	-1
7		-3	-3	-3
6		-3	-3	-3
5	-2	-2	-3	-3
4	-3	-3	-2	-2
3	-3	-3	-3	-3
2	-3	-3	-3	-3
1	-2	-2	-3	-3
0	4	5	-2	-3

FIG. 6

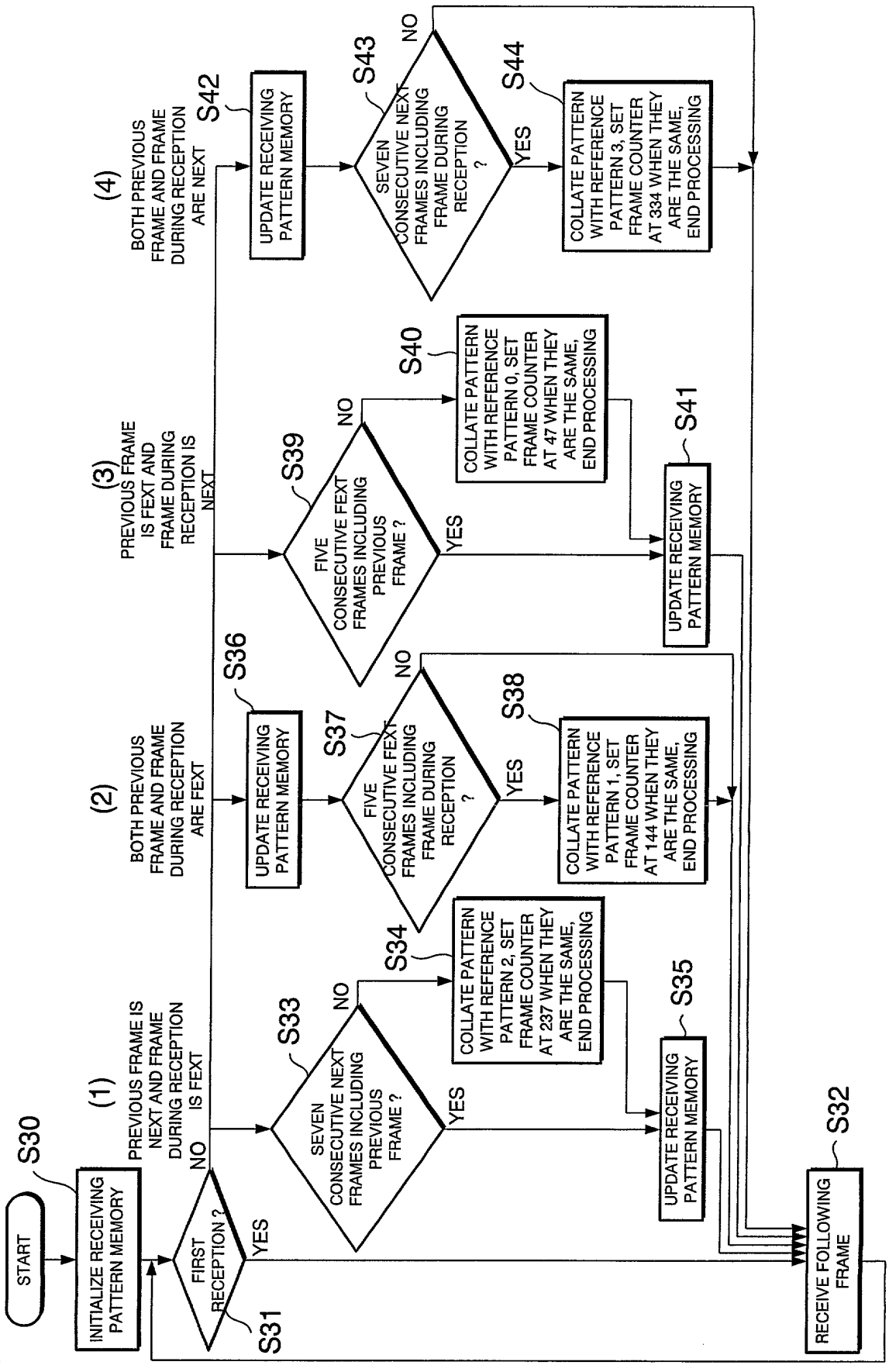

START
S30
INITIALIZE RECEIVING PATTERN MEMORY
S31
FIRST RECEPTION ?
NO
YES
(1)
PREVIOUS FRAME IS NEXT AND FRAME DURING RECEPTION IS FEXT
S33
SEVEN CONSECUTIVE NEXT FRAMES INCLUDING PREVIOUS FRAME ?
NO
YES
S34
COLLATE PATTERN WITH REFERENCE PATTERN 2, SET FRAME COUNTER AT 237 WHEN THEY ARE THE SAME, END PROCESSING
S35
UPDATE RECEIVING PATTERN MEMORY
(2)
BOTH PREVIOUS FRAME AND FRAME DURING RECEPTION ARE FEXT
S36
UPDATE RECEIVING PATTERN MEMORY
S37
FIVE CONSECUTIVE FEXT FRAMES INCLUDING FRAME DURING RECEPTION ?
NO
YES
S38
COLLATE PATTERN WITH REFERENCE PATTERN 1, SET FRAME COUNTER AT 144 WHEN THEY ARE THE SAME, END PROCESSING
(3)
PREVIOUS FRAME IS FEXT AND FRAME DURING RECEPTION IS NEXT
S39
FIVE CONSECUTIVE FEXT FRAMES INCLUDING PREVIOUS FRAME ?
NO
YES
S40
COLLATE PATTERN WITH REFERENCE PATTERN 0, SET FRAME COUNTER AT 47 WHEN THEY ARE THE SAME, END PROCESSING
S41
UPDATE RECEIVING PATTERN MEMORY
(4)
BOTH PREVIOUS FRAME AND FRAME DURING RECEPTION ARE NEXT
S42
UPDATE RECEIVING PATTERN MEMORY
S43
SEVEN CONSECUTIVE NEXT FRAMES INCLUDING FRAME DURING RECEPTION ?
NO
YES
S44
COLLATE PATTERN WITH REFERENCE PATTERN 3, SET FRAME COUNTER AT 334 WHEN THEY ARE THE SAME, END PROCESSING
S32
RECEIVE FOLLOWING FRAME

FIG. 7

CONTENTS OF ARRAYS A

	DURING RECEPTION OF FEXT	DURING RECEPTION OF NEXT
A[9]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES NINE LINE BEFORE	
A[8]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES EIGHT LINES BEFORE	
A[7]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES SEVEN LINE BEFORE	
A[6]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES SIX LINE BEFORE	
A[5]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES FIVE LINE BEFORE	
A[4]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES FOUR LINE BEFORE	
A[3]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES THREE LINE BEFORE	
A[2]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES TWO LINE BEFORE	
A[1]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES IN THE LINE BEFORE	
A[0]	NUMBER OF CONSECUTIVE FEXT FRAMES BEFORE FRAME DURING RECEPTION	DIFFERENCE BETWEEN NUMBERS OF THE NEAREST PREVIOUS CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES BEFORE FRAME DURING RECEPTION

FIG. 8

9/25

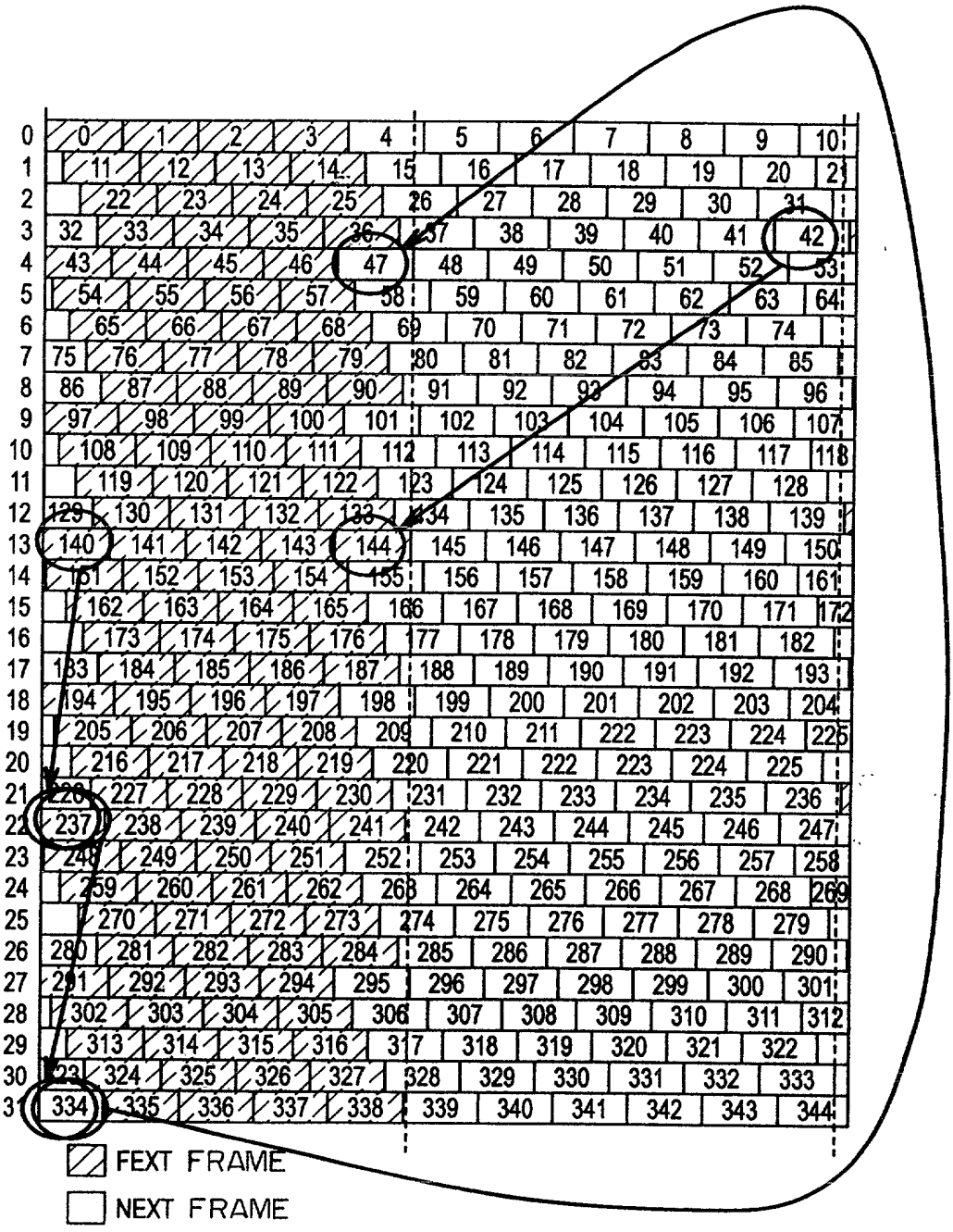


FIG. 9

10/25

LINE	NEXT	FEXT	DIFFER-ENCE
0.5	7	4	3
1.5	7	4	3
2.5	7	4	3
3.5	6	4	2
4.5	7	4	3
5.5	7	4	3
6.5	7	4	3
7.5	7	4	3
8.5	6	4	2
9.5	7	4	3
10.5	7	4	3
11.5	7	4	3
12.5	6	5	1
13.5	6	4	2
14.5	7	4	3
15.5	7	4	3
16.5	7	4	3
17.5	6	4	2
18.5	7	4	3
19.5	7	4	3
20.5	7	4	3
21.5	6	5	1
22.5	6	4	2
23.5	7	4	3
24.5	7	4	3
25.5	7	4	3
26.5	6	4	2
27.5	7	4	3
28.5	7	4	3
29.5	7	4	3
30.5	7	4	3
31.5	6	4	2

FIG. 10

EP 2 369 850 A2

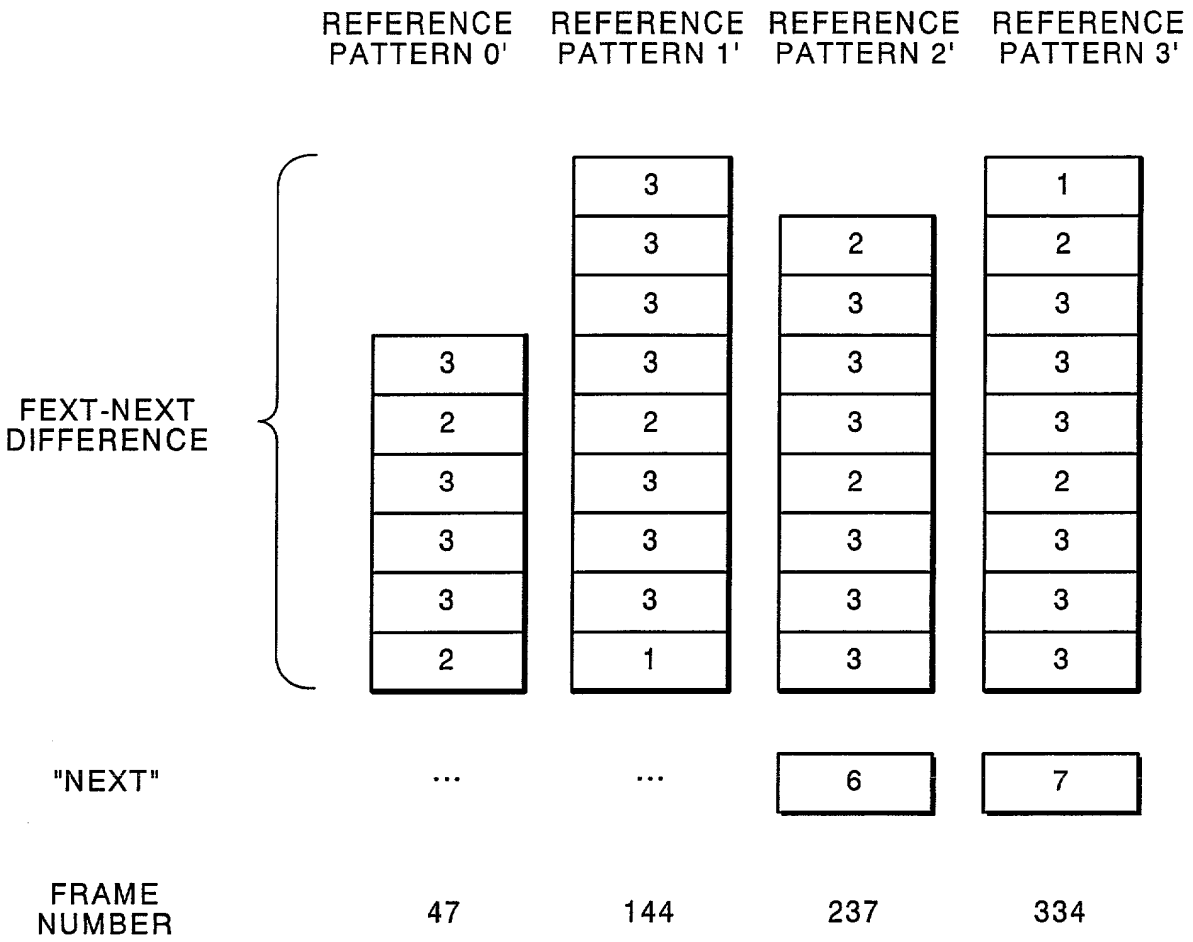

REFERENCE PATTERN 0'
REFERENCE PATTERN 1'
REFERENCE PATTERN 2'
REFERENCE PATTERN 3'
FEXT-NEXT DIFFERENCE
3 2 3 3 3 2
3 3 2 3 3 1
2 3 3 3 3 2
1 2 3 3 3 3
3 3 3 3 3 3
3 3 2 3 3 3
3 3 3 3 2 3
3 3 3 3 3 3
"NEXT"
...
...
6
7
FRAME NUMBER
47
144
237
334

FIG. 11

n	REFERENCE PATTERN 0'	REFERENCE PATTERN 1'	REFERENCE PATTERN 2'	REFERENCE PATTERN 3'
	REF[0',n]	REF[1',n]	REF[2',n]	REF[3',n]
9				1
8		3	2	2
7		3	3	3
6		3	3	3
5	3	3	3	3
4	2	2	2	2
3	3	3	3	3
2	3	3	3	3
1	3	3	3	3
0	2	1	6	7

FIG. 12

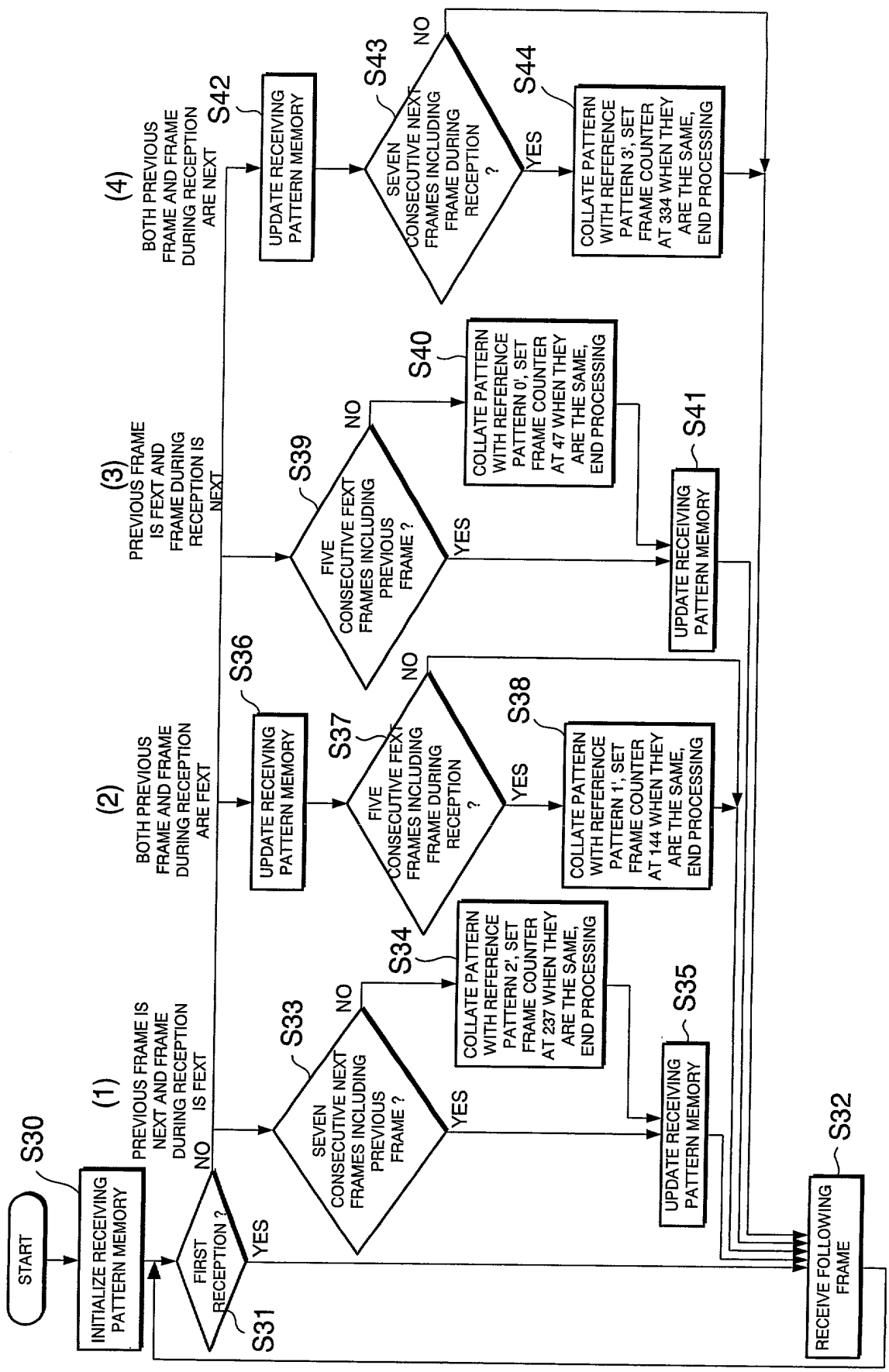

START
S30
INITIALIZE RECEIVING PATTERN MEMORY
S31
FIRST RECEPTION ?
NO
YES
(1)
PREVIOUS FRAME IS NEXT AND FRAME DURING RECEPTION IS FEXT
S33
SEVEN CONSECUTIVE NEXT FRAMES INCLUDING PREVIOUS FRAME ?
NO
YES
S34
COLLATE PATTERN WITH REFERENCE PATTERN 2', SET FRAME COUNTER AT 237 WHEN THEY ARE THE SAME, END PROCESSING
S35
UPDATE RECEIVING PATTERN MEMORY
(2)
BOTH PREVIOUS FRAME AND FRAME DURING RECEPTION ARE FEXT
S36
UPDATE RECEIVING PATTERN MEMORY
S37
FIVE CONSECUTIVE FEXT FRAMES INCLUDING FRAME DURING RECEPTION ?
NO
YES
S38
COLLATE PATTERN WITH REFERENCE PATTERN 1', SET FRAME COUNTER AT 144 WHEN THEY ARE THE SAME, END PROCESSING
(3)
PREVIOUS FRAME IS FEXT AND FRAME DURING RECEPTION IS NEXT
S39
FIVE CONSECUTIVE FEXT FRAMES INCLUDING PREVIOUS FRAME ?
NO
YES
S40
COLLATE PATTERN WITH REFERENCE PATTERN 0', SET FRAME COUNTER AT 47 WHEN THEY ARE THE SAME, END PROCESSING
S41
UPDATE RECEIVING PATTERN MEMORY
(4)
BOTH PREVIOUS FRAME AND FRAME DURING RECEPTION ARE NEXT
S42
UPDATE RECEIVING PATTERN MEMORY
S43
SEVEN CONSECUTIVE NEXT FRAMES INCLUDING FRAME DURING RECEPTION ?
NO
YES
S44
COLLATE PATTERN WITH REFERENCE PATTERN 3', SET FRAME COUNTER AT 334 WHEN THEY ARE THE SAME, END PROCESSING
S32
RECEIVE FOLLOWING FRAME

FIG. 13

CONTENTS OF ARRAYS B

	DURING RECEPTION OF FEXT	DURING RECEPTION OF NEXT
B[9]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES NINE LINE BEFORE	
B[8]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES EIGHT LINE BEFORE	
B[7]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES SEVEN LINE BEFORE	
B[6]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES SIX LINE BEFORE	
B[5]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES FIVE LINE BEFORE	
B[4]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES FOUR LINE BEFORE	
B[3]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES THREE LINE BEFORE	
B[2]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES TWO LINE BEFORE	
B[1]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES IN THE LINE BEFORE	
B[0]	NUMBER OF CONSECUTIVE NEXT FRAMES BEFORE FRAME DURING RECEPTION	DIFFERENCE BETWEEN NUMBERS OF THE NEAREST PREVIOUS CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES BEFORE FRAME DURING RECEPTION

FIG. 14

US 2004/0240546 A1

15/25

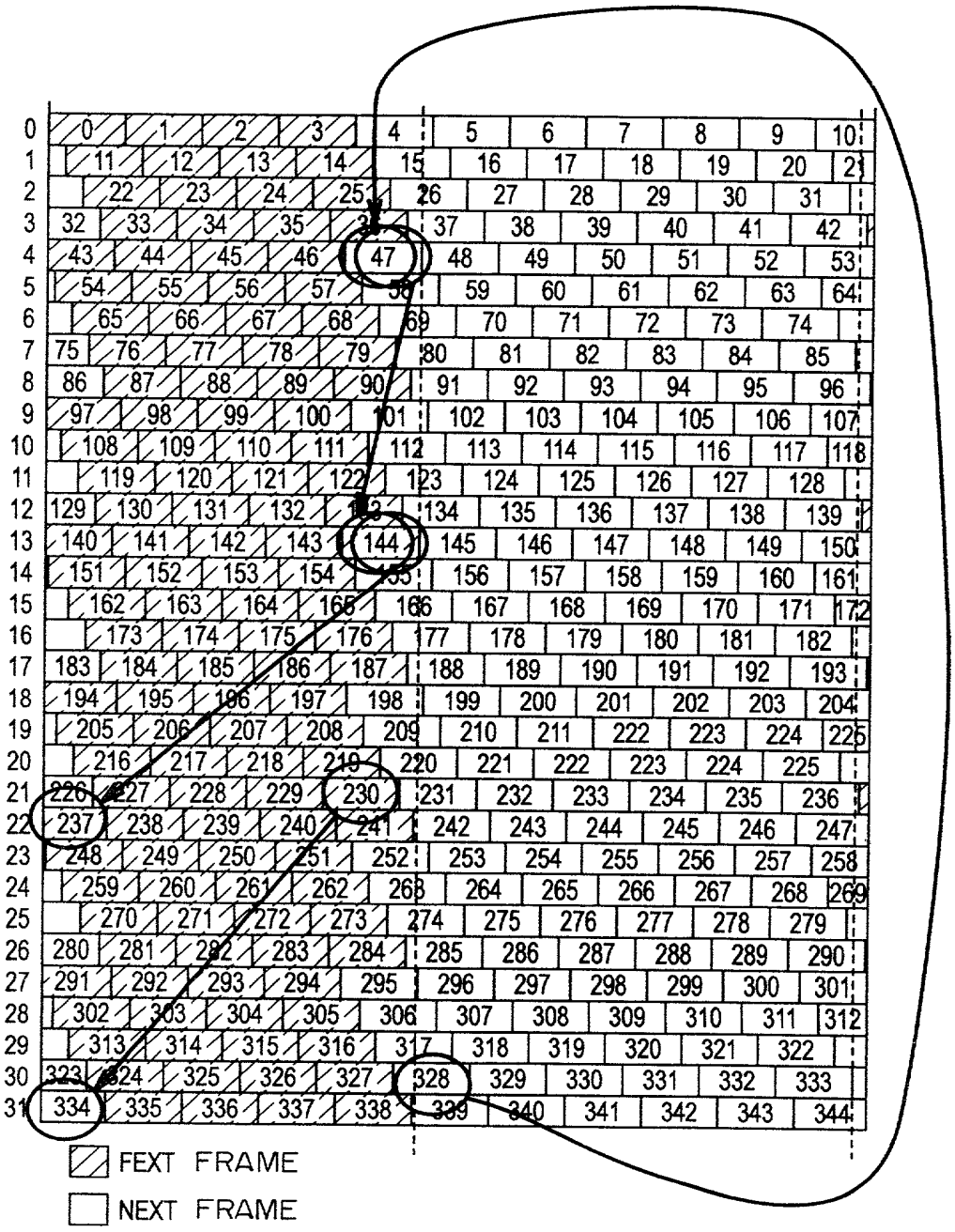


FIG. 15

WHEN FEXT-NEXT DIFFERENCE IS USED

REFERENCE PATTERN	FRAME SYNCHRONIZATION	HYPERFRAME SYNCHRONIZATION
0	238～334	47
1	335～344,0～42	144
2	43～140	237
3	141～237	334

FIG. 16

WHEN NEXT-FEXT DIFFERENCE IS USED

REFERENCE PATTERN	FRAME SYNCHRONIZATION	HYPERFRAME SYNCHRONIZATION
0'	231～328	47
1'	329～344,0～47	144
2'	48～144	237
3'	145～230	334

FIG. 17

WHEN FEXT-NEXT DIFFERENCE AND NEXT-FEXT DIFFERENCE ARE COMBINED

REFERENCE PATTERN	FRAME SYNCHRONIZATION	HYPERFRAME SYNCHRONIZATION
0	238～334	47
1'	335～344,0～47	144
2'	48～144	237
3	145～237	334

FIG. 18

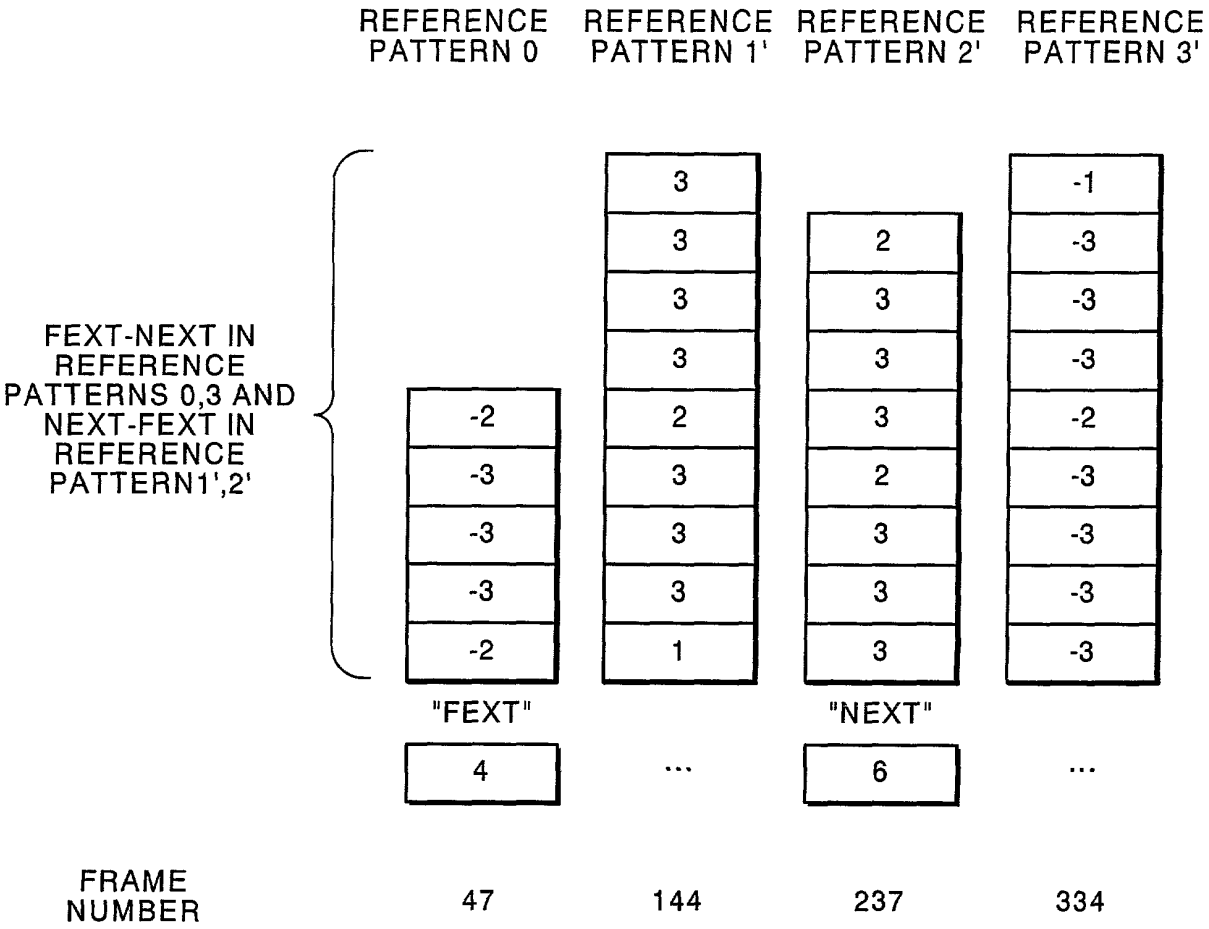

REFERENCE PATTERN 0
REFERENCE PATTERN 1'
REFERENCE PATTERN 2'
REFERENCE PATTERN 3'
FEXT-NEXT IN REFERENCE PATTERNS 0,3 AND NEXT-FEXT IN REFERENCE PATTERN1',2'
-2
-3
-3
-3
-2
3
3
3
3
2
3
3
3
1
2
3
3
3
3
3
3
-1
-3
-3
-3
-2
-3
-3
-3
-3
"FEXT"
"NEXT"
4
...
6
...
FRAME NUMBER
47
144
237
334

FIG. 19

		REFERENCE PATTERN 0	REFERENCE PATTERN 1'	REFERENCE PATTERN 2'	REFERENCE PATTERN 3'
	n	REF[0,n]	REF[1',n]	REF[2',n]	REF[3,n]
	8		3	2	1
	7		3	3	3
	6		3	3	3
	5	2	3	3	3
	4	3	2	2	2
	3	3	3	3	3
	2	3	3	3	3
	1	2	3	3	3
	0	4	1	6	3

FIG. 20

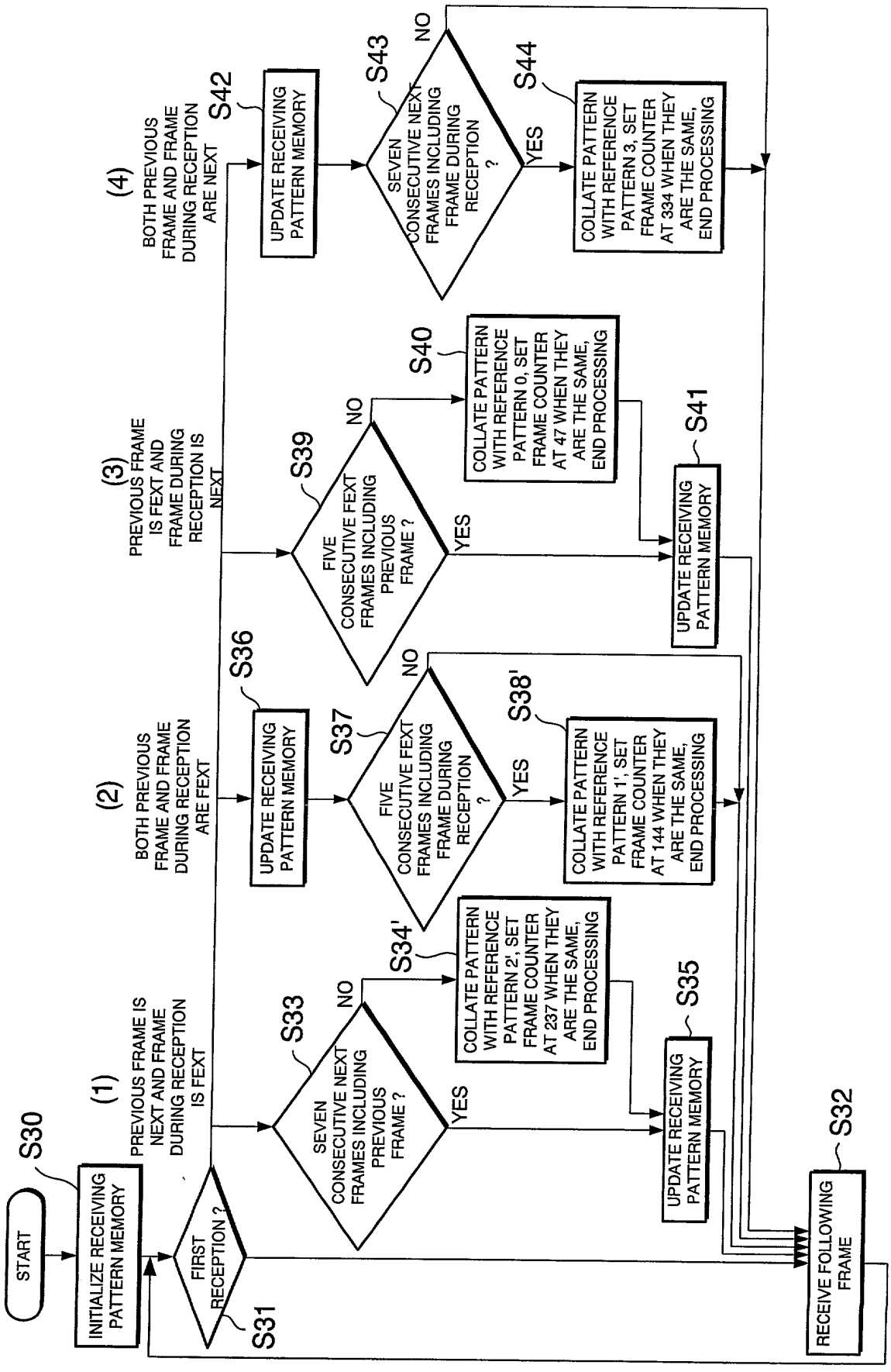

START
INITIALIZE RECEIVING PATTERN MEMORY
S30
FIRST RECEPTION ?
S31
(1)
PREVIOUS FRAME IS NEXT AND FRAME DURING RECEPTION IS FEXT
SEVEN CONSECUTIVE NEXT FRAMES INCLUDING PREVIOUS FRAME ?
S33
NO
YES
COLLATE PATTERN WITH REFERENCE PATTERN 2', SET FRAME COUNTER AT 237 WHEN THEY ARE THE SAME, END PROCESSING
S34'
UPDATE RECEIVING PATTERN MEMORY
S35
(2)
BOTH PREVIOUS FRAME AND FRAME DURING RECEPTION ARE FEXT
UPDATE RECEIVING PATTERN MEMORY
S36
FIVE CONSECUTIVE FEXT FRAMES INCLUDING FRAME DURING RECEPTION ?
S37
NO
YES
COLLATE PATTERN WITH REFERENCE PATTERN 1', SET FRAME COUNTER AT 144 WHEN THEY ARE THE SAME, END PROCESSING
S38'
(3)
PREVIOUS FRAME IS FEXT AND FRAME DURING RECEPTION IS NEXT
FIVE CONSECUTIVE FEXT FRAMES INCLUDING PREVIOUS FRAME ?
S39
NO
YES
COLLATE PATTERN WITH REFERENCE PATTERN 0, SET FRAME COUNTER AT 47 WHEN THEY ARE THE SAME, END PROCESSING
S40
UPDATE RECEIVING PATTERN MEMORY
S41
(4)
BOTH PREVIOUS FRAME AND FRAME DURING RECEPTION ARE NEXT
UPDATE RECEIVING PATTERN MEMORY
S42
SEVEN CONSECUTIVE NEXT FRAMES INCLUDING FRAME DURING RECEPTION ?
S43
NO
YES
COLLATE PATTERN WITH REFERENCE PATTERN 3, SET FRAME COUNTER AT 334 WHEN THEY ARE THE SAME, END PROCESSING
S44
RECEIVE FOLLOWING FRAME
S32

FIG. 21

CONTENTS OF ARRAYS A

	DURING RECEPTION OF FEXT	DURING RECEPTION OF NEXT
A[8]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES EIGHT LINE BEFORE	
A[7]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES SEVEN LINE BEFORE	
A[6]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES SIX LINE BEFORE	
A[5]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES FIVE LINE BEFORE	
A[4]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES FOUR LINE BEFORE	
A[3]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES THREE LINE BEFORE	
A[2]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES TWO LINE BEFORE	
A[1]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES IN THE LINE BEFORE	
A[0]	NUMBER OF CONSECUTIVE FEXT FRAMES BEFORE FRAME DURING RECEPTION	DIFFERENCE BETWEEN NUMBERS OF THE NEAREST PREVIOUS CONSECUTIVE FEXT FRAMES AND CONSECUTIVE NEXT FRAMES BEFORE FRAME DURING RECEPTION

FIG. 22

CONTENTS OF ARRAYS B

	DURING RECEPTION OF FEXT	DURING RECEPTION OF NEXT
B[8]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES EIGHT LINE BEFORE	
B[7]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES SEVEN LINE BEFORE	
B[6]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES SIX LINE BEFORE	
B[5]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES FIVE LINE BEFORE	
B[4]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES FOUR LINE BEFORE	
B[3]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES THREE LINE BEFORE	
B[2]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES TWO LINE BEFORE	
B[1]	DIFFERENCE BETWEEN NUMBERS OF CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES IN THE LINE BEFORE	
B[0]	NUMBER OF CONSECUTIVE NEXT FRAMES BEFORE FRAME DURING RECEPTION	DIFFERENCE BETWEEN NUMBERS OF THE NEAREST PREVIOUS CONSECUTIVE NEXT FRAMES AND CONSECUTIVE FEXT FRAMES BEFORE FRAME DURING RECEPTION

FIG. 23

EP 2 296 365 A2

22/25

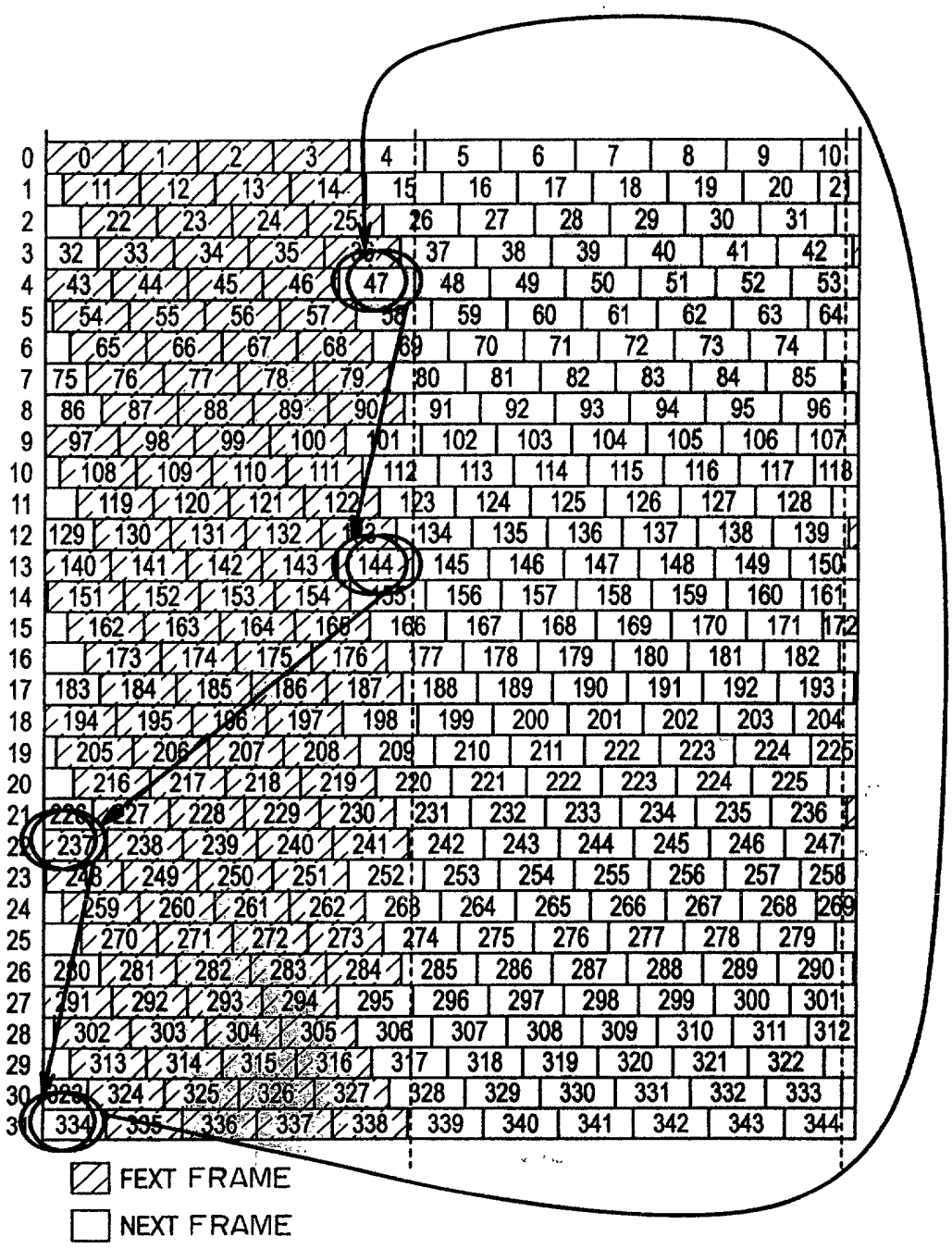


FIG. 24

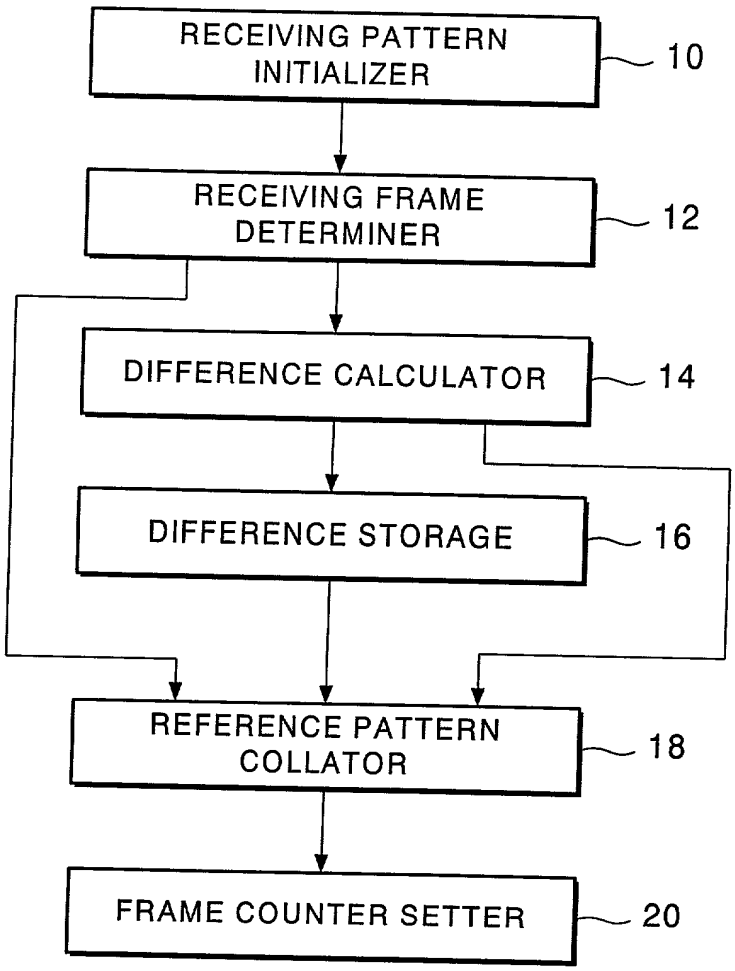

RECEIVING PATTERN INITIALIZER
10
RECEIVING FRAME DETERMINER
12
DIFFERENCE CALCULATOR
14
DIFFERENCE STORAGE
16
REFERENCE PATTERN COLLATOR
18
FRAME COUNTER SETTER
20

FIG. 25

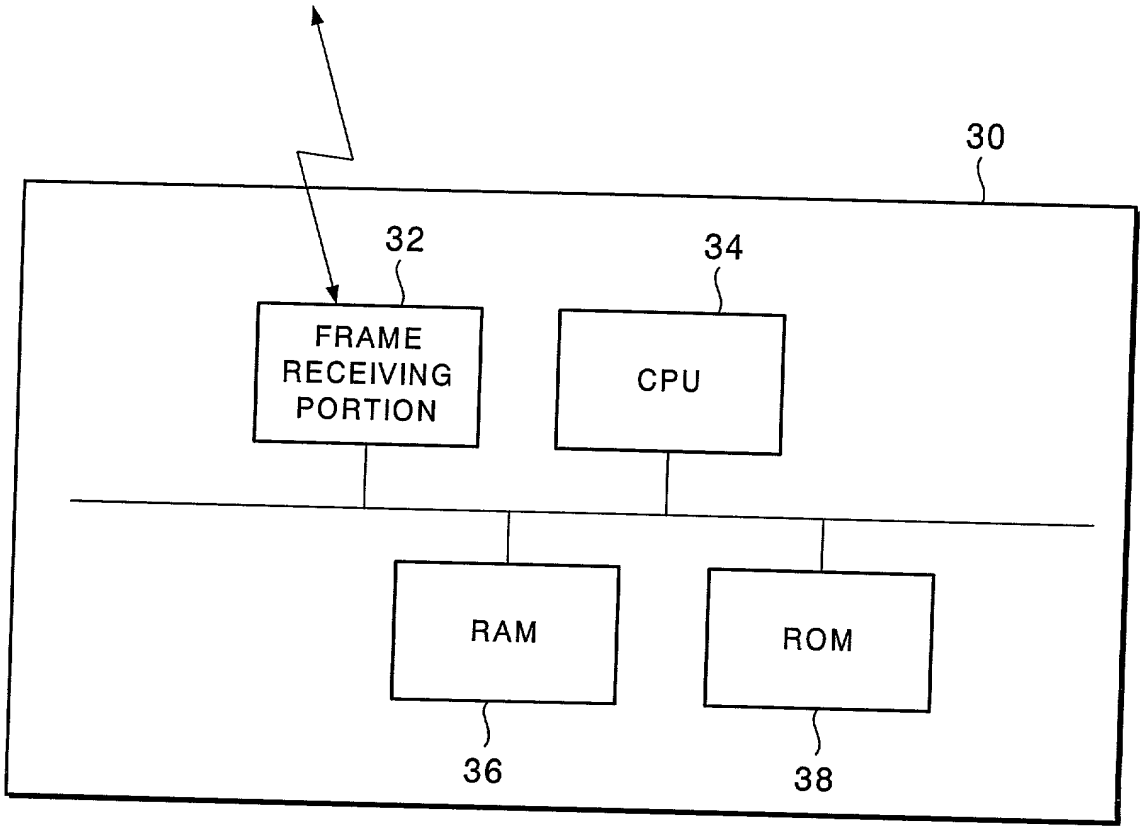
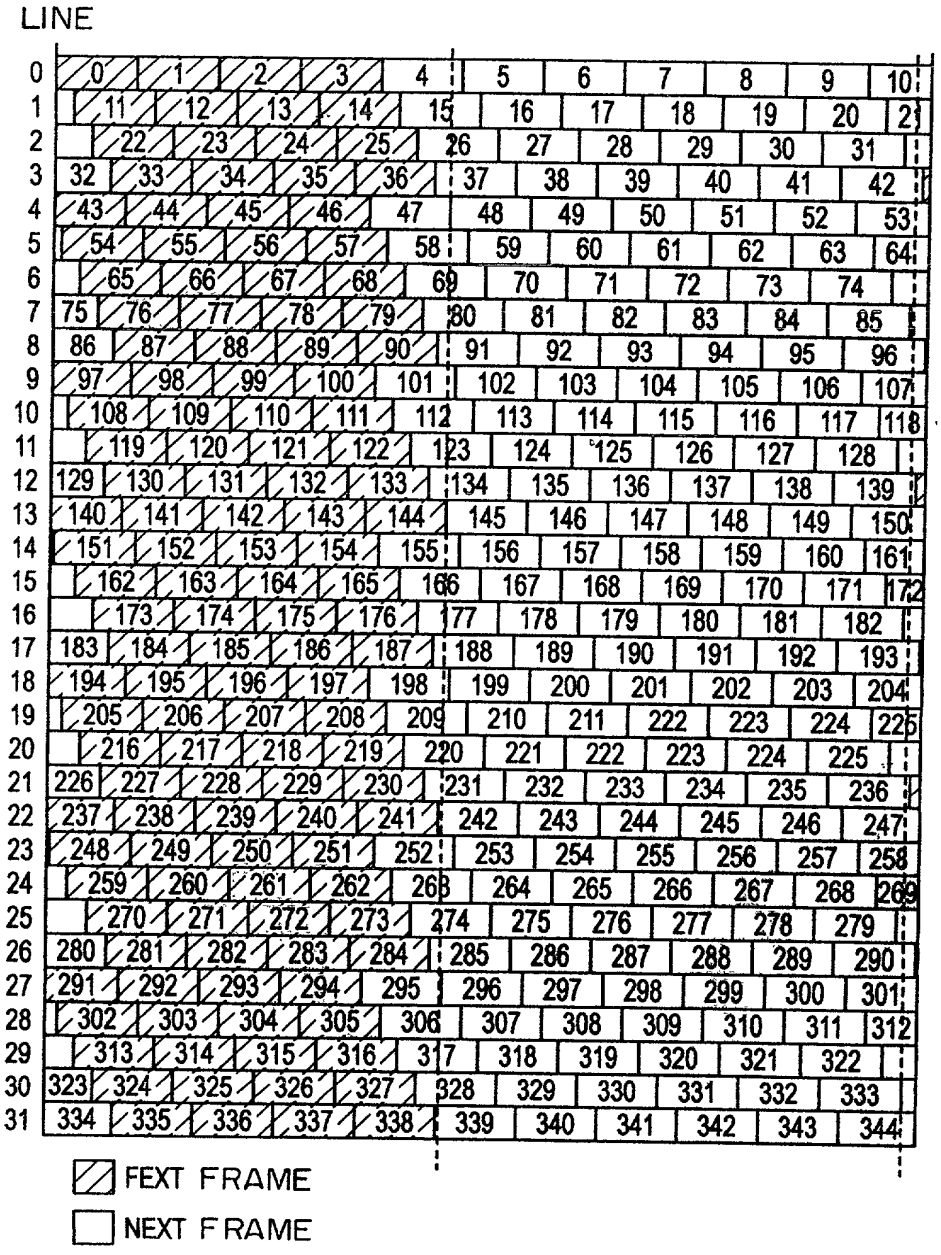


FIG. 26

25/25


LINE
0 0 1 2 3 4 5 6 7 8 9 10
1 11 12 13 14 15 16 17 18 19 20 21
2 22 23 24 25 26 27 28 29 30 31
3 32 33 34 35 36 37 38 39 40 41 42
4 43 44 45 46 47 48 49 50 51 52 53
5 54 55 56 57 58 59 60 61 62 63 64
6 65 66 67 68 69 70 71 72 73 74
7 75 76 77 78 79 80 81 82 83 84 85
8 86 87 88 89 90 91 92 93 94 95 96
9 97 98 99 100 101 102 103 104 105 106 107
10 108 109 110 111 112 113 114 115 116 117 118
11 119 120 121 122 123 124 125 126 127 128
12 129 130 131 132 133 134 135 136 137 138 139
13 140 141 142 143 144 145 146 147 148 149 150
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16 173 174 175 176 177 178 179 180 181 182
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25 270 271 272 273 274 275 276 277 278 279
26 280 281 282 283 284 285 286 287 288 289 290
27 291 292 293 294 295 296 297 298 299 300 301
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29 313 314 315 316 317 318 319 320 321 322
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FIG. 27